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ABSTRACT

The objective of this study was to appraise Macomb County Community College's (MCCC) industrial cooperative education program. Students enrolled in design and mechanical technology from 1970 to 1975, who either participated in the co-op program (N=252) or did not (N=274), and their employers (N=45) responded to the questionnaires. Information was gathered in the following areas: current job status; salary; method of obtaining employment; work experience previous to college training; reasons for attending MCCC; education since leaving MCCC; four-year college attended; rating of the educational program and of the cooperative education experience; and suggestions and comments. Results showed that 65% of the co-op respondents were employed in program-related full-time jobs. The co-op group was more likely to use college services when seeking employment. Only 3.57% of the co-op group was unemployed as compared to 6.5% of the non co-op group. Sixty-seven percent of the co-op group graduated from MCCC as compared to 39% of the non co-op group. Non co-op group respondents reported earning higher salaries. The employers who responded indicated a favorable rating of the employees trained at MCCC and they perceived those with co-op experience as more efficient and able to learn more quickly. Respondent comments, the survey instruments, and a bibliography are appended. (MB)

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AN APPRAISAL OF THE INDUSTRIAL COOPERATIVE EDUCATION PROGRAM BASED ON RESPONSES FROM STUDENTS AND EMPLOYERS

JC 780 572

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ABSTRACT

The objective of this study was to appraise MCCC's industrial cooperative education program. Students enrolled in design and mechanical technology from 1970 to 1975 were queried, as were their employers. The student and company samples were compiled from college records. Information received was tabulated and analyzed by computer and yielded corresponding counts, percentages, and statistical significances.

Sixty-five percent of the co-op respondents are employed in program related full-time jobs. The co-op group is more likely to use college services when seeking employment than the non co-op group. Only 3.57% of the co-op group is unemployed, but 6.57% of the non co-op group is unemployed. The co-op students graduated from MCCC at a rate of 67.0%; only 38.68% of the non co-op students graduated. On six of the seven items designed to evaluate the preparation received at the college, the co-op group was more likely to give higher ratings than the non co-op group. Three of the six differences were statistically significant.

In every subgroup category the non co-op group reported higher salaries. Differences in five of the six subgroups were statistically significant.

The employers who responded indicated a favorable rating of the employees trained at MCCC. While half of the employers felt that former co-ops tend to be promoted faster than non co-ops, the other half felt that there was no difference in the promotion rates of the two groups. The employers perceived employees who had the co-op experience as more efficient and able to learn more quickly on the job when compared with employees who did not have the co-op experience.

Comments and suggestions given by respondents are included in the report, along with the instruments and letters used to conduct the study.

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A special acknowledgment is accorded to Mr. Arthur Daniels, Professor of Mathematics, who made possible the arrangement of the data and the use of particular statistical tools. He enthusiastically supplied the technical expertise needed to prepare data for computer analyses.

CHAPTER I

INTRODUCTION

Statement of the Problem

This descriptive study was conducted to answer several questions concerning the Industrial Cooperative Education Program at Macomb County Community College (MCCC). The following questions were posed:

1. Do more persons who participate in co-op education work in careers related to their technical program than those who do not participate in co-op education?
2. Do former co-op participants earn a higher salary than former non co-op participants?
3. Why do students enroll in the Industrial Technology Program at MCCC?
4. Do more persons who participate in the co-op option graduate from MCCC than those who do not participate in the co-op program?
5. Do co-op students perceive the preparation they receive in the various MCCC Industrial Technology Programs more favorably than non co-op students in the same programs?
6. How do former co-op students rate their co-op job placements?
7. How do former co-op students rate the relevance of the curricula to the co-op experience?
8. How do employers of former co-op students rate the technical preparation received by co-op students at MCCC?
9. How do employers of former non co-op students rate the technical preparation received by these students at MCCC?
10. How do employers rate the Industrial Cooperative Education Program at MCCC, based on their experiences with MCCC students they hire?
11. What do employers of former MCCC students see as the strengths and weaknesses of the various Industrial Technology programs at MCCC?

Significance of the Study

This research study is significant because it is the first detailed study of students and employers who participated in the Industrial Cooperative Education at MCCC. Moreover, the study was conducted by persons not connected with co-op education. The research remained unconstrained by any requirements of state or federal funding agencies. The combination of responses solicited from former cooperative education (co-op) students, former non-cooperative education (non co-op) students and area employers provides data for some future evaluation of the program. Because of these features, this study may serve as a model for future studies of co-op programs.

Definition of Terms

For purposes of this report these definitions apply:

Cooperative Education - a system in which students participate in periods of academic study and periods of work in jobs which pertain to the program of study.

Cooperative Education Student - one who has completed at least one co-op job assignment while registered as a student at MCCC.

Non-Cooperative Education Student - one who did not participate in the co-op education option while registered as a student at MCCC.

Industrial Technology Programs - those MCCC programs in Design Technology and Mechanical Technology.

Design Technology Programs -
- Auto Body Design
- Surveying Technology
- Architectural Drafting
- Printing Technology
- Special Machine Design
- Graphic and Commercial Art
- Tool Fixture and Die Design

Mechanical Technology Programs -
- Climate Control Technology
- Electro Technology

Mechanical Technology Programs (Cont'd) -
Radio T.V. and Sound Repair
Fluid Power Technology
Industrial Supervision
Metallurgical Technology
Metals Machining
Metrology and Calibration
Numerical Control
Welding Technology
Civil Technology
Automotive Technology
Aviation Mechanic Technology
Labor Studies

Literature Review

Since student follow-up reports are usually not disseminated for general use by professionals conducting similar studies, a study for use as a model or for comparison was unavailable. Even a computer search of the literature incorporated into the Education Resources Information Center (ERIC) System yielded few pertinent reports.

Reports such as Lanham's[1] deal with high school programs. Others, like Heinemann's,[2] Gilli's,[3] Straubel's,[4] and others tend to normative or prescriptive in nature.

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[1]Frank W. Lanham, and Edwin J. Weber. "Cooperative Occupational Training Programs Need Quality Control." Business Education Forum 24 (May 1970): 11-13.

[2]H. N. Heinemann. "Co-Operative Programs at La Guardia Community College, New York," Community and Junior College Journal 45 (November 1974): 16-17.

[3]Angelo C. Gilli. "Using Follow-Up Studies to Improve 2-Yr. Programs," Engineering Education 65 (May 1975): 807-9.

[4]James Straubel. "Accountability in Vocational Technical Instruction," Education Technology 11 (January 1971): 43-45.

Clark found that a literature review for follow-up studies was, in reality, "an attempt to determine strategies to adopt for individual needs."[5] The search conducted for this particular study corroborates the observation made by Mr. Clark.

Various sources of research literature were reviewed to develop techniques and methods necessary to conduct this project. Numerous questionnaires were checked for content and form. The bibliography documents the sources examined.

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[5]Donald L. Clark. Follow-Up of Maple Woods Community College Occupational Graduates, 1970-1974 Final Report (Kansas City, Mo.: ERIC Document Reproduction Service, ED 116 753, March 1975), p. 2.

CHAPTER II

METHODOLOGY

The purpose of this chapter is to present the various steps followed during the study. The sampling procedures, data gathering instruments, data analyses and survey procedures are discussed.

Sampling Procedures

Cooperative Education Student Sample

The "purposive" or "judgment selection" method was used to determine the needed sample group. This sampling technique is called "purposive" because human judgment underlies the criterion used to establish the sampling unit.[1] In this instance, the criterion was the fact of participation in the cooperative education option in one of the Design Technology or Mechanical Technology programs at MCCC from 1970 through 1975.

Table 1 indicates the program title and years in which students participated in cooperative education. Students from each program, indicated by an X in Table 1, were included in the study. The group of 481 students, listed by program, was completed after consolidation of information found in rosters, lists, and records kept in the Industrial Cooperative Education Office.

Non-Cooperative Education Student Sample

A random sample of 731 students was generated from rosters obtained from the Records Office on South Campus. First, representative core courses for the Industrial Technology programs listed in Table 1, and showing co-op placement, were selected. Final grade rosters were then obtained as the source of student names. Use of the rosters maximized the opportunity for inclusion of students in the sample and lessened duplication in the selection process.

---

[1]Joseph E. Hill and August Kerber. Models, Methods, and Analytical Procedures in Education Research. Detroit, Michigan: Wayne State University Press, 1967. p. 110.

TABLE I

Yearly Program Listing Indicating
Placement of Cooperative Education Students

Code	Program	1970-71[1]	1971-72	1972-73	1973-74	1974-75
7010	Auto Body Design	X[2]	X	X	X	X
7020	Surveying Technology	X	X	X	X	X
7030	Architectural Drafting	X	X	X	X	X
7040	Printing Technology	X	X	-[3]	-	-
7050	Special Machine Design	X	X	X	X	X
7060	Graphic & Commercial Art	X	X	X	X	X
7070	Tool Fixture & Die Design	X	X	X	X	X
8010	Climate Control Technology	X	X	-	X	X
8020	Electro Technology	X	X	X	X	X
8030	Radio T.V. & Sound Repair	-	-	-	-	X
8040	Fluid Power Technology	X	X	X	X	X
8050	Industrial Supervision	-	X	X	-	X
8060	Metallurgical Technology	X	X	X	X	X
8070	Metals Machining	-	X	-	-	-
8080	Metrology & Calibration	-	X	X	X	X
8090	Numerical Control	-	-	X	X	-
8100	Welding Technology	X	X	X	-	X
8110	Civil Technology	-	-	-	-	X
8120	Automotive Tech Aviation Mech Technology	-	-	-	-	-
8130	Labor Studies	-	-	-	-	-

[1] Represents the college academic year.

[2] X indicates that placements were made during that year for the program.

[3] - indicates that no placements were made during that year for the program.

Rosters from the following courses offered between January 1970 and December 1975 were used to develop the sample:

1. GCA 101 Graphic and Commercial Art (each term offered)
2. EDT 110 Descriptive Geometry (each term offered)
3. MTH 101 Technical Methematics (each term offered)
4. EST 101 Radio-TV Sound Systems (1 term per year)
5. PRT 160 Letterpress I (1 term per year)
6. WET 192 Gas Welding (1 term per year)
7. CIV 101 Materials (1 term per year)
8. FPT 100 Fluid Power Fundamentals (1 term per year)
9. SUM 101 Industrial Organization (1 term per year)
10. LS 103 Organization of Labor (1 term per year)
11. SUR 110 Elementary Surveying (1 term per year)

Every eighth student was chosen from among all those listed on the rosters. When the student was recognized as one who participated in cooperative education, that student was eliminated from this sample and the next student was chosen. The final list of 731 students was prepared. At the time of selection, it was impossible to determine each student's program. Because only thirty-two were women in the co-op sample and forty-nine in the non co-op sample, separate data analyses based on sex differences was not warranted.

Employer Sample

A list of companies participating in the Industrial Cooperative program from 1970 through 1975 was compiled from records obtained from the Industrial Cooperative Education Office. Sixty-eight (68) companies were listed. An additional nineteen (19) area companies which hired MCCC students was obtained from the South Campus Placement Office and the Southeastern Michigan League of Community Colleges (SEMLCC) Regional Placement Center. In this manner the final group of eighty-seven companies was compiled.

Data Gathering Instruments

The content of the survey instruments was developed after consultation with Dr. James Blanzy, Mr. James Varty and Mr. Paul Gould.

Student Survey

The student survey form was designed to answer several questions posed for this study. Information was gathered to yield:

1. current job status
2. salary
3. method of obtaining employment
4. work experience previous to college training
5. reasons for attending MCCC
6. education since leaving MCCC
7. four-year colleges attended
8. rating of the educational program
9. rating of cooperative education experience
10. suggestions and comments

A copy of the survey instrument is attached in Appendix A. It is important to note the format of the instrument. It was designed to be clear to the respondent and easy for him to answer. Details of the design were based on techniques suggested in reputable research manuals. Respondents were encouraged to include written comments and suggestions in order to allow expression of thoughts and opinions beyond direct answers to the items posed in the questionnaire itself. Several procedures were initiated with this study to maximize the response rate:

1. The cover letter was signed by the Dean of Technical Education and by the Industrial Cooperative Education Coordinators. A sample of the letter is attached in Appendix A.

2. The survey instrument was printed on colored paper to make it distinctive. The literature on research establishes that a survey on colored paper is more likely to draw a response than one on white paper.

3. A reminder postcard, also printed on colored paper, was prepared for mailing one week after the first mailing of the survey instrument. A copy of the card is attached in Appendix A.

4. A Texas Instruments SR-51-II calculator was offered as a prize to encourage students to reply. Each respondent was to be eligible for the random drawing held at the conclusion of the study. The winner was notified by mail. A copy of the letter is attached in Appendix A.

Company Survey

The survey instrument sent to the companies included in the study was designed to yield the following information:

1. number of employees trained at MCCC between 1970 and 1975
2. number of recently hired employees who participated in the MCCC Industrial Co-op Program
3. technical preparation received at MCCC by the employees
4. evaluation of some effects of cooperative education
5. comments and suggestions.

A cover letter was prepared and signed by the Dean of Technical Education and a Coordinator of Industrial Cooperative Education.

Copies of the instrument and cover letter are attached in Appendix B.

The cover letters for both surveys were signed by the Dean and the Co-op Coordinators in order to stimulate responses. The signatories introduced no bias, however, because all forms were returned directly to the Research Office in the pre-addressed envelopes. Inquiries from the students were directed to the Research Office where the promised confidentiality was maintained during the entire study.

Data Analyses

The information received from the student samples and the company sample was coded and transferred onto Datronics Scoring Sheets for computer scoring. Each group was then tabulated separately.

Student Survey

Four different computer programs were used to manipulate the information. The programs were developed by Mr. Arthur Daniels. From the student survey the following data emerged:

1. frequency counts for each item
2. percentage equivalents for each response categorized by various identifiable groupings
3. mean score ($\bar{X}$) for each item
4. standard deviation (S.D.) for each item
5. ~~t~~-scores for each item.

Various combinations of the data were permitted by the flexibility of the computer programs. Data were analyzed for each student group in the following categories:

1. program
2. program completion
3. employment status

The data for each group as a whole were also analyzed to determine variations between the co-op and the non co-op student respondents.

Lists of four-year colleges and programs chosen by the respondents were prepared. Copies are attached in Appendix C. Samples of comments to various items were prepared and are attached in Appendix D.

Company Survey

The data analysis for the company survey responses consisted of:

1. tabulating frequency counts
2. calculating the range, mean ($\bar{X}$), median, mode, and percentage values for each item.

The small number of responses that fell into the various categories permitted no further analysis.

Procedure

Student Survey

The entire first mailing of the survey instruments was completed on April 18, 1977. Because first class postage was used, non-deliverable letters were returned. The postcards were sent by bulk mail one week later to every person in both groups. The entire second mailing of the survey instrument was completed on May 17, 1977. The closing date for returns was June 22, 1977.

As returns became available, coding was undertaken and various lists recording comments, the names of colleges attended, and so forth were compiled. All returns were used in the analysis. Even though a questionnaire was not filled out completely, what responses it did contain were included, with no harm to the subsequent statistical analysis.

Only two mailings were needed to receive at least a 50% total return rate. Therefore, a third mailing was not used.

The return rate achieved seemed to indicate the effectiveness of the four previously described procedures initiated to maximize the response rate.

Company Survey

Only one mailing of the Company Survey was planned.

This mailing was accomplished on February 25, 1977. Due to a slow return rate, a random telephone check was conducted. Calls were made to the contact persons for four non-responding companies. Of those, one indicated that there was no time to respond, one did not receive the letter, and two contact persons were no longer with the companies queried.

As a result of these difficulties, telephone calls were made to the remaining non-responsing companies. Another copy of the survey instrument was sent to the companies contacted.

Assurances of a response were received from a majority of the 35 persons contacted. Ten calendar days after the second mailing, thirteen completed forms were received from those contacted.

CHAPTER III

RESULTS

The purpose of this chapter is to present the accumulated data in a systematic manner. For reading ease, each table will be separately placed throughout the narrative. The chapter is arranged as follows:

1. Response rate patterns are presented for both surveys.
2. Each question related to the student survey is stated and the pertinent data are presented and briefly discussed.
3. Each question related to the company survey is stated and the pertinent data are presented and briefly discussed.

Response Rate

Student Survey

The two mailings to the co-op student sample yielded a return rate of 61.01%. Whereas the same two mailings for the non co-op student sample netted a return of 44.9%. The composite rate for the student survey was 51.4%, thereby providing a statistically valid sample. (See Tables 2, 3, & 4). For the purpose of this report it would be inappropriate to conjecture as to possible reasons for the difference between the two student groups. The choice of participation was an individual one. The drawing, however, did seem to encourage responses. As Tables 2 and 3 indicate, the return rate for the first mailing along with the reminder postcard resulted in a 48.7% return for the co-op group. The non co-op group response for the same period was 30%.

Table 5 indicates the returns listed by program for both groups. It should be noted that 33.94% of the Non Co-op respondents did not indicate

TABLE 2

Returns for Co-op Student Sample

	Date	Number Mailed	Number Non-Deliverable	Number Returned	Return Rate
First Letter	4/18/77	481	62	204	48.7%
Second Letter	5/17/77	215	6	48	22.9%
Total[1]			68 = 14.13%	252 = 61.01%	

[1]481 - 68 = 413
252 ÷ 413 = 61.01%

TABLE 3

Non Co-op Student Sample Returns

	Date	Number Mailed	Number Non-Deliverable	Number Returned	Return Rate
First Letter	4/18/77	731	97	190	30.0%
Second Letter	5/17/77	444	24	84	19.3%
[1]Total			121 = 16.55%	274 = 44.9%	

[1]731 - 121 = 610
274 ÷ 610 = 44.9%

TABLE 4

Composite Return Rate

	Number Mailed	Non-Deliverable	Number Returned	Return Rate
First Letter	1,212	159	394	37.4%
Second Letter	659	30	132	20.9%
Total[1]		189 = 15.6%	526 = 51.4%	

[1]1212 - 189 = 1023
526 ÷ 1023 = 51.4%

TABLE 5

Student Survey Returns Listed by Program

Program[1]	Co-op Sample N = 252		Non Co-op Sample N = 274	
	Number of Responses	% of Total Sample	Number of Responses	% of Total Sample
Auto Body Design	40	15.87	9	3.28
Surveying Technology	13	5.16	4	1.46
Architectural Drafting	29	11.51	18	6.57
Printing Technology	2	0.79	2	.73
Special Machine Design	22	8.73	6	2.19
Graphic & Comercial Art	27	10.71	20	7.30
Tool, Fixture & Die Design	22	8.73	10	3.65
Climate Control Technology	11	4.37	17	6.20
Electro Technology	38	15.08	36	13.14
Radio, TV Sound Repair	5	1.98	3	1.09
Fluid Power Technology	7	2.78	6	2.19
Industrial Supervision	3	1.19	16	5.84
Metallurgical Technology	13	1.19	3	1.09
Metals Machining	0	0	2	.73
Metrology & Calibration	3	1.19	4	1.46
Numerical Control	1	0.40	6	1.82
Welding Technology	4	1.59	10	3.65
Civil Technology	6	2.38	9	3.28
Not Listed by Student	6	2.78	93	33.94
Total	252		274	

[1]Arranged here and in following tables by curriculum code sequence.

TABLE 6

Cooperative Student Sample Listed by Program

Program	Number in Sample	Responses	% of the Program Sample Size Responding
Auto Body Design	76	40	52.6
Surveying Technology	20	13	65.0
Architectural Drafting	63	29	48.0
Printing Technology	4	2	50.0
Special Machine Design	39	22	56.4
Graphic & Commercial Art	55	27	49.1
Tool Fixture & Die Design	52	22	42.3
Climate Control Technology	23	11	47.8
Electro Technology	63	38	60.3
Radio T.V. & Sound Repair	17	5	29.4
Fluid Power Technology	18	7	38.9
Industrial Supervision	6	3	50.0
Metallurgical Technology	26	13	50.0
Metals Machining	2	0	0
Metrology & Calibration	3	3	100.0
Numerical Control	2	1	50.0
Welding Technology	8	4	50.0
Civil Technology	10	6	60.0
Total	487[1]	246[2]	

[1]On original lists, six students were each identified with two programs. Final identification was obscured for the six.

[2]Program affiliation was not provided by six respondents.

any program. Table 6 provides additional information concerning the Co-op Sample. Of the eighteen programs included in the study, eleven programs had return rates of 50% or higher.

Company Survey

The company survey was mailed on February 25, 1977. The mailings and telephone requests yielded a 53.57% response rate (45 returns). Eight responses were not useable due to various reasons as indicated on Table 7. Some companies did not submit forms as complete as others. All responses were considered part of the reported data. The nature of the statistical calculations used did not require a complete set of data for each respondent.

Answers to Questions Related
to the Student Survey

1. Do more persons who participate in co-op education work in careers related to their technical program than those who do not participate in co-op education?

Over 21% more co-op respondents are employed full-time in program related jobs than are the non co-op respondents. Tables 8, 9 and 10 provide information concerning respondents':

1. employment prior to enrolling at MCCC
2. methods of obtaining employment
3. current employment

Table 8 shows that before enrolling at MCCC 29.93% of those in the non co-op group had jobs related to their technical programs, while only 19.05% of those in co-op had related jobs. But, as Table 10 shows, after being at MCCC the co-op was far more likely to be employed full-time in a program related job.

Table 9 shows that over one-third of the co-op respondents continued working for their co-op employers. From the written explanations about

TABLE 7

Response Rate
for Employer Survey

N = 87

	Letters	Responses	Useable Responses[4]
Co-op Companies[1]	68	36	
Others[2]	19	9	
Totals[3]	87	45 (53.57%)	37 (44.04%)

[1]Companies which participated in the Industrial Cooperative Education Program from 1970-1975.

[2]Companies registered with SEMLCC Regional Placement Center as of December 10, 1976 and advertised jobs with M.C.C.C.

[3]Three forms were returned as non-deliverable. Therefore, N = 84 for percentage calculation.

[4]Eight forms were returned blank. The reasons given were:

a) company was closing down
b) three companies maintain no record on the subject
c) company is too new to co-op to give opinions
d) three companies responded None to item A.

TABLE 8

Work Experience Before Enrolling in a Technical Program at M.C.C.C.

Experience	Co-op N = 252		Non Co-op N = 274	
	Number of Responses	% of Sample	Number of Responses	% of Sample
Worked Full-Time	104	41.27	167	60.95
Worked Part-Time	66	26.19	46	16.79
Worked in a Job Related to Technical Program	48	19.05	82	29.93
Worked in a Job Not Related to Technical Program	152	60.32	127	46.35
No Work Experience	31	12.30	16	5.84
Total[1]	401		438	

[1]Students were permitted to check any item that applied to them; hence, the inflated totals.

TABLE 9

Methods of Obtaining Employment after Leaving M.C.C.C.
as Indicated by Students

Methods	Co-op N = 252		Non Co-op N = 274	
	Number of Responses	% of Sample	Number of Responses	% of Sample
Continued with Co-op Company	94	37.30	0	0
College Placement Office	18	7.14	8	2.92
Employment Agency	3	1.19	7	2.55
Parents, Friends, Relatives	29	11.51	50	18.25
Advertisement	17	6.75	33	12.04
Other[1]	60	23.81	116	42.34
Total[2]	221		214	

[1]The "other""category contains the following:
1) applied by going to a company
2) helped by a faculty member
3) was working for the company while attending M.C.C.C. (non co-op group)

[2]Discrepancies in totals are due to incomplete forms.

obtaining employment given by the non co-op students, it is apparent that roughly the same percentage continued working with the same company they worked for while attending MCCC. It is also apparent that the non co-op group tends to seek employment from contacts outside the college rather than from within.

Table 10 shows some interesting results. Over 64% of the co-op group are employed full-time in program related jobs, and only 3.57% are unemployed and seeking work. In contrast, just 43.79% of the non co-op group are employed full-time in program related jobs, and 6.57% are unemployed and seeking work. Furthermore, of those employed full-time, the non co-op respondents are almost twice as likely as the co-ops to hold a postion not related to their studies.

2. Do former co-op participants earn a higher salary than former non co-op participants?

Table 11 indicates the salary information as stated by the student groups. For purposes of calculation the salaries were converted into the following scores showing monthly earnings:

1 = $1 - $900
2 = $901 - $1200
3 = $1201 - $1500
4 = $1501 - $1800
5 = over $1800

The scores were then used to provide a mean score, the standard deviation and any statistical significance.

One-fourth of each group did not respond to this sensitive item. The average salary for the non co-op group was calculated as significantly higher than the salary for the co-op group.

TABLE 10

Current Employment Status of Respondents to the Student Survey

Status	Co-op Sample N = 252		Non Co-op Sample N = 274	
	Number of Responses	% of Total Sample	Number of Responses	% of Total Sample
Employed full-time in a program related job	163	64.68	120	43.79
Employed full-time in a non program related job	37	14.68	77	28.10
Employed part-time	18	7.14	11	4.01
Unemployed and seeking work	9	3.57	18	6.57
Unemployed and not seeking work	9	3.57	16	5.84
Total[1]	236	93.64	242	88.31

[1]Discrepancies in totals are results of incomplete items on returned questionnaires.

TABLE 11

Monthly Salary[1] Received by
Respondents to the Student Survey

	Co-op Sample N = 252		Non Co-op Sample N = 274	
Monthly Salary	Number of Responses	% Answering the Question	Number of Responses	% Answering the Question
$0 - 900	62	32.80	47	23.38
$901 - 1200	71	37.56	75	37.31
$1201 - 1500	45	23.80	44	21.89
$1501 - 1800	10	5.29	23	11.44
over $1800	1	0.52	12	5.97
No Response	63	--	73	--
Mean Score ($\bar{X}$) = 2.032			Mean Score ($\bar{X}$) = 2.393*	
Standard Deviation (S.D.) = .9080			Standard Deviation (S.D.) = 1.1372	

*statistically significant at .99 level

[1]1 = $1 - 900
2 = $901 - 1200
3 = $1201 - 1500
4 = $1501 - 1800
5 = over $1800

Each salary was converted to a score for the calculations.

TABLE 12

Average Monthly Salary[1] (Mean) for
Some Subgroups of Student Respondents

Subgroups	Co-op Sample		Non Co-op Sample	
	Mean ($\bar{X}$) Score	S.D.[3]	Mean ($\bar{X}$) Score	S.D.
Graduates	2.088	.9550	2.405*	1.1197
Non Graduates	1.900	.7550	2.429**	1.1551
Program Related Job Holders	2.054	.8913	2.429**	1.1856
Non Program Related Job Holders	1.867	.8844	2.294*	1.1254
Design Technology Programs	1.894	.8659	2.196	1.1909
Mechanical Technology Programs	2.254	.9452	2.581*	1.0608
Program Not Known[2]	None		2.262	1.1722

*significant at .95 level
**significant at .99 level

[1]1 = $1 - 900
2 = $901 - 1200
3 = $1201 - 1500
4 = $1501 - 1800
5 = over $1800

[2]N = 93 for the Non Co-op Sample

[3]S.D. = Standard Deviation

One-third of the co-op respondents earn $900 or less per month; only 24% of the non co-op group earn salaries in that category. The non co-op group shows a 17.41% representation in the two highest categories; whereas, only 5.81% of the co-op group are in those categories.

Table 12 presents the same information using the translation used previously for seven subgroups of both student samples. In the six cases having data for both groups, the salary was significantly higher for five non co-op subgroups. Only the Design Technology subgroup difference was not significantly greater.

3. Why do students enroll in the Industrial Technology Program at MCCC?

Table 13 indicates the responses made by the two groups for this item. It is interesting to note that 33.21% of the non co-op group said that job upgrading was a reason for coming to MCCC. However, only 12.30% of the co-op group so indicated. Over 40% of both student groups indicated the reason for enrollment at MCCC was to get a different job. The percentage of respondents who indicated preparation for college transfer was 27.78% for the co-op group and 22.63% for the non co-op group.

4. Do more persons who participate in the Co-op option graduate from MCCC than those who do not participate in the Co-op option?

Table 14 shows that 67.07% of the co-op sample graduated and 38.68% of the non co-op sample graduated.

This question is answered yes because 28.39% more of the co-op group graduated from MCCC than did the non co-op group.

Table 15 describes the educational activities of both groups since attendance at MCCC. Of the co-op group, 65.48% reported further educational activities and 60.58% of the non co-op group so reported. The table also reveals that 21.51% of the co-op respondents indicated attendance at a four

TABLE 13

Reasons for Enrolling in a Technical Program
at M.C.C.C. as Stated by Respondents

Reason	Co-op Sample N = 252		Non Co-op Sample N = 274	
	Number of Responses	% of Total Sample	Number of Responses	% of Total Sample
Job Upgrading	31	12.30	91	33.21
Get a Different Job	118	46.83	119	43.43
Get Any Job	43	17.06	19	6.93
Prepare for College Transfer	70	27.78	62	22.63
Employer's Suggestion	1	.40	8	2.92
Other[1]	55	21.83	51	18.61
Total[2]	318		350	

[1]The two major categories of these comments are:
1) for a personal education
2) an expressed interest in the field

[2]Students may have indicated more than one reason.

TABLE 14

Graduation Status[1]

Year	Co-op Graduates Number of Graduates	Non Co-op Graduates Number of Graduates
1970	8	4
1971	18	5
1972	14	8
1973	22	13
1974	33	21
1975	38	14
1976	26	25
1977	10	16
Total	169 = 67.07% of 252	106 = 38.68% of 274

Non Graduates	
Co-op[2]	Non Co-op[3]
77 = 30.55% of 252	154 = 56.20% of 274

[1]Totals for students who indicated the year of graduation.

[2]2.4% of the sample did not respond to this item.

[3]5.12% of the sample did not respond to this item.

TABLE 15

Educational Activities Attended Since Leaving M.C.C.C.

	Co-op Sample N = 252		Non Co-op Sample N = 274	
	Number of Responses	% of Total Sample	Number of Responses	% of Total Sample
Took courses at another two-year college	10	3.97	24	8.76
Took courses at a four-year college	54	21.51	78	28.46
Took one or more in-service activities	37	14.68	27	9.85
Completed one or more technical programs	12	4.76	28	10.22
Working toward a Bachelor's degree	67	26.59	43	15.69
Completed a Bachelor's degree	11	4.37	10	3.65
None	87	34.52	108	39.42
Total[1]	278		318	

[1]Students were able to indicate more than one.

year college. Of the non co-op respondents, 28.46% said they had attended a four year college. Appendix C provides lists of institutions, majors and credit hours as supplied by the students from both groups. (Table 35 in Appendix C presents a recapitulation of the totals).

5. Do co-op students perceive the preparation they receive in the various MCCC Industrial Technology Programs more favorably than non co-op students in the same programs?

Table 16 indicates that the mean scores on six of the seven items were more favorable for the co-op group. The item ability to get along with others was rated only slightly higher by the non co-op group. The differences for the following three items were calculated as statistically significant in favor of the co-op group:

1. hands-on experience
2. getting a better job
3. overall program rating

The students were asked to indicate changes that could be made in the programs. Samples of the suggestions and comments are attached in Appendix D, Section 1 and 2.

Directly following Table 16 are seven additional tables (Tables 17 to 23). Each presents one aspect of preparation as listed in Table 16. The mean, standard deviation and resulting significant differences are then presented for the following seven subgroups:

1. graduates
2. non graduates
3. program related job holders
4. non program related job holders
5. Design Technology programs
6. Mechanical Technology programs
7. program not known

TABLE 16

Preparation Received At M.C.C.C. As Perceived By Respondents[1]

Preparation	Co-op Sample N = 252			Non Co-op Sample N = 274		
	Number of Responses	Mean	Standard Deviation	Number of Responses	Mean	Standard Deviation
Technical Knowledge	247	2.053	.970	256	2.078	.902
Hands-on Experience	248	2.391*	1.148	248	2.669	1.152
Self-Understanding	245	2.331	.952	247	2.344	.872
Ability to Get Along With Others	246	2.191	.937	247	2.085	.847
Ability to Communicate With Others	243	2.198	.899	247	2.126	.875
To Get A Better Job	244	2.168*	1.064	235	2.689	1.252
Overall My Program Was	243	2.140*	.896	256	2.402	.999

*significant at the .99 level

[1]The scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

TABLE 17

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

	Technical Knowledge			
	Co-Op Sample		Non Co-Op Sample	
Subgroup	Mean ($\bar{X}$)[1]	S.D.[2]	Mean ($\bar{X}$)	S.D.
Graduates	2.000	.9540	2.049	.8090
Non Graduates	2.145	.9961	2.086	.9523
Program Related Job Holders	1.994	.9155	2.016	.8423
Non Program Related Job Holders	2.378	1.1236	2.051	.8986
Design Technology Programs	2.027	1.0195	2.246	.9230
Mechanical Technology Programs	2.099	.8777	2.068	.8900
Program Not Known[3]	None	None	1.988	.882

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 18

Average Scores of Some Subgroups
of Student Respondents to Aspects
of Technical Preparation Received at M.C.C.C.

Hands-On Experience

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	S.D.[2]	Non Co-Op Sample Mean ($\bar{X}$)	S.D.
Graduates	2.357**	1.1089	2.687	1.1516
Non Graduates	2.408	1.1830	2.622	1.729
Program Related Job Holders	2.351**	1.1183	2.612	1.1309
Non Program Related Job Holders	2.659	1.2782	2.608	1.1604
Design Technology Programs	2.273*	1.1541	2.875	1.1190
Mechanical Technology Programs	2.637	1.1145	2.823	1.1916
Program Not Known[3]	None	None	2.291	1.021

* significant at .99 level
** significant at .95 level

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 19

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

	Self-Understanding			
	Co-Op Sample		Non Co-Op Sample	
Subgroup	Mean ($\bar{X}$)[1]	S.D.[2]	Mean ($\bar{X}$)	S.D.
Graduates	2.216	.8831	2.280	.8134
Non Graduates	2.568	1.0537	2.356	.9065
Program Related Job Holders	2.376	.9634	2.275	.7954
Non Program Related Job Holders	2.386	.9345	2.276	.8826
Design Technology Programs	2.268	.9528	2.386	.9506
Mechanical Technology Programs	2.372	.8004	2.438	.8989
Program Not Known[3]	None		2.234	.8310

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 20

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

Ability To Get Along With Others

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	Co-Op Sample S.D.[2]	Non Co-Op Sample Mean ($\bar{X}$)	Non Co-Op Sample S.D.
Graduates	2.095	.8468	2.112	.7678
Non Graduates	2.419	1.0906	2.074**	.8798
Program Related Job Holders	2.215	.9119	2.008**	.8215
Non Program Related Job Holders	2.182	1.0062	2.039	.7854
Design Technology Programs	2.180	.9803	2.196	.9528
Mechanical Technology Programs	2.169	.8243	1.965	.7278
Program Not Listed[3]	None		2.192	.8920

** significant at .95 level

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 21

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

Ability To Communicate With Others

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	Co-Op Sample S.D.[2]	Non Co-Op Sample Mean ($\bar{X}$)	Non Co-Op Sample S.D.
Graduates	2.096	.8304	2.124	.8028
Non Graduates	2.438	1.0066	2.147**	.9198
Program Related Job Holders	2.225	.8752	2.059	.8161
Non Program Related Job Holders	2.136	.9907	2.066	.8635
Design Technology Programs	2.230	.9234	2.268	.9909
Mechanical Technology Programs	2.157	.8333	2.009	.6976
Program Not Known[3]	None	None	2.205	.9790

**significant at .95 level

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 22

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

To Get A Better Job

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	Co-Op Sample S.D.[2]	Non Co-Op Sample Mean ($\bar{X}$)	Non Co-Op Sample S.D.
Graduates	2.091**	1.0080	2.378	1.1385
Non Graduates	2.320*	1.1333	2.894	1.2930
Program Related Job Holders	1.971*	.9338	2.328	1.1047
Non Program Related Job Holders	3.024	1.2438	2.871	1.2412
Design Technology Programs	2.143*	1.0880	2.942	1.2467
Mechanical Technology Programs	2.233	1.0546	2.500	1.1587
Program Not Known[3]	None	None	2.784	1.348

* significant at .99 level
** significant at .95 level

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

TABLE 23

Average Scores of Some Subgroups
of Student Respondents to Aspects of
Technical Preparation Received at M.C.C.C.

	Overall My Program Was			
	Co-Op Sample		Non Co-Op Sample	
Subgroup	Mean ($\bar{X}$)[1]	S.D.[2]	Mean ($\bar{X}$)	S.D.
Graduates	2.067**	.8774	2.356	.9501
Non Graduates	2.267	.8692	2.426	1.0467
Program Related Job Holders	2.065	.8412	2.254	.9714
Non Program Related Job Holders	2.545	1.0103	2.450	.9605
Design Technology Programs	2.088*	.9295	2.534	1.0037
Mechanical Technology Programs	2.225	.8313	2.379	.9796
Program Not Known[3]	None	None	2.341	1.015

* significant at .99 level
** significant at .95 level

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

[2]S.D. = Standard Deviation

[3]N = 93 for non co-op group

Table 17 shows how the respondents evaluated the "technical knowledge" they acquired at MCCC. Students who had the co-op experience and who held jobs related to their programs were the most satisfied with the technical knowledge they acquired. Least satisfied were non co-op students who has studied in some of the Design Technology programs.

Table 18 notes that the co-op respondents from the Design Technology programs rated the "hands-on experience" aspect of the program most favorable. The score was significant at the .99 level when compared to the Design Technology programs' non co-op respondents. The co-op graduate subgroup and program related job holder subgroup also had statistically significant ratings.

Table 19 describes the perception of the "development of self understanding" at MCCC. The most favorable rating was given by the co-op graduate subgroup. The least favorable rating was given by the non co-op Mechanical Technology respondents.

The items presented in Tables 20 and 21, "ability to get along with others" and "ability to communicate with others," received very similar ratings from the co-op respondents. The pattern was evident for the non co-op respondents also.

It is apparent from Table 22 that the program related job holders who were co-ops felt that the technical preparation at MCCC helped them to "get a better job." It seems the expectations of this co-op group were met in this regard. On the other hand, the non program related job holders who were co-ops rated the item with the least favorable score from both samples.

Table 23 gives the ratings for the overall program. Five co-op subgroups gave the technical preparation received at MCCC a higher rating than the same non co-op subgroups. Only the non co-op, non program related job

holders rated the overall program slightly higher than the same co-op subgroup. The co-op graduate subgroup and Design Technology programs subgroup had scores that were statistically significant when compared with the corresponding non co-op subgroups.

6. How do former co-op students rate their co-op job placements?

Table 24 indicates that 82.77% of the respondents (197) rated the job placement as excellent or good. The mean score of 1.823 expresses this finding. Space was provided on the survey for comments on this item. Examples of these comments are attached in Appendix D, Section 3. It is interesting to note that the comments listed cover a wide range of opinions and experiences. The tone conveyed by the statements, however, relays a generally favorable attitude toward the co-op job.

Directly following Table 24, ratings for the subgroups are given in Table 25. Whether or not a student thought his co-op experience was relevant to his program depends to some degree on his perception of the two and on his ability to use on the job that he learned in class.

7. How do former co-op students rate the relevance of the courses to the co-op experience?

Table 26 shows that the respondents' mean ($\bar{X}$) score was 2.112. Sample comments pertaining to this item are attached in Appendix D, Section 4. The comments on the relevance issue were varied. The perceptive and transfer abilities of the students as they move from classroom to job environment are variables that may have influenced the comments. Immediately following those comments are samples of suggestions and comments concerning the Co-op option in Appendix D, Section 5.

Directly following Table 26, ratings for the subgroups are given in Table 27. The ratings given by students who had graduated from a program and those given by students who held positions related to their studies were

TABLE 24

Rating of Co-op Job Placements as Perceived by Co-op Respondents

N = 252

Rating[1]	Number of Respondents	% of Total Answering the Question	% of Total Sample
Excellent	117	49.16	46.43
Good	80	33.61	31.75
Adequate	13	5.46	5.16
Fair	19	7.98	7.54
Poor	8	3.36	3.17
No Response	15	--	6.00
Total	252		100.50
Mean Score	= 1.823		
Standard Deviation	= 1.068		

[1]The scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

TABLE 25

Average Ratings of Co-Op Job Placement
by Some Subgroups of Respondents

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	Co-Op Sample S.D.[2]
Graduates	1.685**	.9328
Non Graduates	2.070	1.1906
Program Related Job Holders	1.636*	.8605
Non Program Related Job Holders	2.605	1.4000
Design Technology Programs	1.867	1.0242
Mechanical Technology Programs	1.744	1.1349

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

*significant at .99 level
**significant at .95 level

[2]S.D. = Standard Deviation

TABLE 26

Relevance of Courses to Co-op Job Placement as Perceived by Respondents

Rating[1]	Number of Respondents	% of Total Answering Question	% of Total Sample
Excellent	92	38.33	36.51
Good	76	31.67	30.16
Adequate	39	16.25	15.48
Fair	19	7.92	7.54
Poor	14	5.83	5.56
No Response	12	--	4.76
Total	252	100.00	100.01
Mean ($\bar{X}$)	= 2.112		
Standard Deviation	= 1.173		

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

TABLE 27

Average Rating of Relevance of Courses to Co-Op Job Placement of Some Co-Op Subgroups

Subgroup	Co-Op Sample Mean ($\bar{X}$)[1]	S.D.[2]
Graduates	1.982**	1.0847
Non Graduates	2.361	1.2617
Program Related Job Holders	1.893*	1.0120
Non Program Related Job Holders	2.976	1.3885
Design Technology Programs	2.207	1.2016
Mechanical Technology Programs	1.917	1.0824

[1]Scores were tabulated as follows:
1 = Excellent
2 = Good
3 = Adequate
4 = Fair
5 = Poor

*significant at .99 level
**significant at .95 level

[2]S.D. = Standard Deviation

both statistically significant, It should be noted, however, that these groups of students are not mutually exclusive.

Answers to Questions Related to the Company Survey

Respondents to the company survey were asked to estimate the numbers of their employees who were trained in various programs in Industrial Technology at MCCC. Their answers are displayed in Tables 28 and 29. Findings are based on these estimates.

8. How do employers of former co-op students rate the technical preparation received by co-op students at MCCC?

Table 30 describes the employers' perceptions of their employees trained at MCCC in the Design Technology programs. An excellent rating was designated by twelve of the respondents (41.38%) and thirteen indicated an adequate rating (44.83%).

Table 31 presents the same information for the Mechanical Technology programs. The small number of responses involving this area (nineteen) indicates that the respondents were generally more familiar with the Design Programs rather than the Mechanical Programs. The excellent rating accounted for nine of the responses (47.37%); and adequate, for eight of the responses (42.10%).

9. How do employers of former non co-op students rate the technical preparation received by these students at MCCC?

Table 32 indicates that only six of the respondents (24%) found the preparation of the Design Technology Programs to be excellent; and fourteen as adequate (56%).

Table 33 notes a similar rating for the Mechanical Technology programs, with ten choosing excellent (45.45%) and eleven choosing adequate (50%).

TABLE 28

Estimated Number of Employees
Trained in the Industrial Technology
Programs at M.C.C.C. from 1970-1975
Response N = 37

		Number of Employees
Mean (average number per company)	=	11.5
Median (mid-point)	=	5
Mode (most frequent number)	=	6
Range (lowest to highest number)	=	1-150

TABLE 29

Estimated Number of Employees from Table 28
Who Participated in Cooperative Education
at M.C.C.C. from 1970-1975
Response N = 37

		Number of Employees
Mean (average number per company)	=	5.3
Median (mid-point)	=	3
Mode (most frequent number)	=	6
Range[1] (lowest to highest number)	=	0-40

[1]Six companies indicated that none of those hired had participated in cooperative education.

TABLE 30

Employer Perceptions of the Technical Preparation Given in the Design Technology Programs at M.C.C.C.
Response N = 29

	Ratings for Co-op Students			
Program	Excellent	Adequate	Fair	Poor
Auto Body Design	2	2	0	0
Surveying	1	1	0	0
Architectural Drafting	1	1	1	0
Printing Technology	1	0	1	0
Special Machine Design	2	4	0	0
Graphic & Commercial Art	3	3	1	0
Tool Fixture & Die Design	3	2	0	1
Total	12 = 41.38%	13 = 44.83%	3 = 10.34%	1 = 3.44%

TABLE 31

Employer Perceptions of the Technical Preparation Given in the Mechanical Technology Programs at M.C.C.C.
Response N = 19

Ratings for Co-op Students

Program	Excellent	Adequate	Fair	Poor
Climate Control Technology	1	0	0	0
Electro Technology	3	2	1	0
TV & Sound Repair	0	2	0	0
Fluid Power Technology	1	1	0	0
Industrial Supervision	0	0	0	0
Metallurgical Technology	1	1	0	0
Metals Machining	1	0	0	0
Metrology & Calibration	1	0	1	0
Numerical Control	0	0	0	0
Welding Technology	0	0	0	0
Civil Technology	1	2	0	0
Total	9 = 47.37%	8 = 42.10%	2 = 10.53%	

TABLE 32

Employer Perceptions of the
Technical Preparation Given in the
Design Technology Programs at M.C.C.C.
Response N = 25

Ratings for Non Co-op Students

Program	Excellent	Adequate	Fair	Poor
Auto Body Design	2	3	0	0
Surveying	0	2	0	0
Architectural Drafting	0	1	0	0
Printing Technology	0	1	1	0
Special Machine Design	1	4	1	0
Graphic & Commercial Art	0	3	2	0
Tool, Fixture & Die Design	3	0	1	0
Total	6=24%	14=56%	5=20%	0

TABLE 33

Employer Perceptions of the
Technical Preparation Given in the
Mechanical Technology Programs at M.C.C.C.
Response N = 22

Ratings for Non Co-op Students

Program	Excellent	Adequate	Fair	Poor
Climate Control Technology	0	0	0	0
Electro Technology	2	3	0	0
TV & Sound Repair	1	0	0	0
Fluid Power Technology	2	1	0	0
Industrial Supervision	0	1	0	0
Metallurgical Technology	2	1	0	1
Metals Machining	0	0	0	0
Metrology & Calibration	0	0	0	0
Numerical Control	1	1	0	0
Welding Technology	0	1	0	0
Civil Technology	0	2	0	0
Automotive Tech Aviation Mech Technology	0	2	0	0
Labor Studies	0	0	0	0
Total	10=45.45	11=50%	0	1=4.54%

TABLE 34

Employer Responses Concerning Long-Range Effects of Cooperative Education
N = 37

Effects / Employees who were co-ops:	Responses: Yes		No		No Difference	
	Number	%	Number	%	Number	%
Tend to be promoted faster[1]	18	48.64	0	0	18	48.64
Appear more satisfied	13	35.13	5	13.51	19	51.35
Are more efficient	23	62.16	3	8.10	11	29.72
Learn on the job quicker	27	72.97	2	5.40	9	24.32
Understand the company better	24	64.86	1	2.70	12	32.43

[1]One respondent omitted this item.

10. How do employers rate the Industrial Cooperative Education Program at MCCC based on their experiences with MCCC students they hire?

Table 34 addresses itself directly to the above question. Employers were presented with several items. The response choices were: Yes, No, and No Difference. There was an even split of opinion as to the promotion rate of co-ops versus non co-ops. Half stated that, Yes, co-ops do tend to be promoted faster and half indicated No Difference between the two groups.

Nineteen employers (51.35%) perceived No Difference in employee satisfation of co-ops versus non co-ops, and thirteen employers (35.13%) indicated that Yes co-ops appear more satisfied. Co-op employees are considered to be more efficient than non co-op employees. This is reflected by the responses of the twenty-three respondents (62.16%) who answered Yes to the item compared with eleven (29.72%) who indicated No Difference between the groups.

Co-ops are perceived as able to learn more quickly on the job as indicated by twenty-seven respondents (72.97%). Co-ops also tend to understand the company better as indicated by 24 responses (64.86%).

11. What do employers of former MCCC students see as the strengths and weaknesses of the various Industrial Technology Programs at MCCC?

The following lists represent some comments as stated by company respondents. All statements were reproduced exactly as the respondents submitted them.

Strengths of Design Technology Programs

Students seem to be able to grasp subject matter very well.

Excellent program.

Program seemed specifically tailored to our functions and required skills.

Strengths of Design Technology Programs (cont'd)

Well disciplined people.

Macomb College produces people with enthusiasm.

Good general background.

Practical applications.

Good basic course.

Skilled, capable and hard working students.

Work ethic and attitudinal training.

A well rounded program.

Knowledge of perspective drawing.

Strengths of the Mechanical Technology Programs

Good understanding of basic electronic principles.

Good math & science courses.

Some very qualified and experienced instructors.

Good.

Technically it is sound.

Good technical background.

Total program has good broad academic background.

Student available before and after normal student summer employees.

Working knowledge of pumps and related systems is good.

Weaknesses of the Design Technology Programs

Our need is more technical/engineering oriented as Illustrators, but as the students had the basic skills the transition and development went satisfactorily.

Blueprint reading, drawing, lettering.

Classroom "state of the art" lags far behind industry. Curriculum is "lackluster" and very, very basic.

Need more work in basic skills.

Weaknesses of the Design Technology Programs (cont'd)

Students seem to be unable to think for themselves.

Knowledge of construction & design only fair. (This may be unfair judgment of freshman & sophomore college students).

Blueprint reading of large involved structures. Field procedures for constuction. Ofc procedures for design.

Not nearly enough in-depth study of the trade.

Problem solving.

Too much by the book. Bad spelling. Light linework.

Lack of theoretical training on higher level.

Drafting quality, tolerances vs. cost, proper material selection.

Hands on training.

Weaknesses of the Mechanical Technology Programs

The students get the impression they will know everything and make fantastic salaries their first week out of school.

Practical application of technical knowledge limited.

Lack of exposure to practical aspects (industrial application of electronic principles).

Should have more labs.

Does not keep up with current technology. A few unqualified "professors."

Needs to be included as part of the co-op program. (automotive mechanics).

Suggestions for the Design Technology Programs

Eliminate the book. Use somebody's practical experience. Work on weaknesses.

Upgrade the quality (if necessary at the cost of quantity).

Invite industry personnel to lecture to students on practical aspects of design.

Develop a program to include "auto chassis design."

Longer class. Less students.

Suggestions for the Design Technology Programs (cont'd)

Stress legal implications of surveying.

We should try and get more students into these programs - especially co-op students.

More updated information to be supplied to the student.

Need more detailing (Dim. Fundamentals) tolerances (P.S., S.D. R.F.)

Less theory and more practical teaching.

Some work could be done on organizing the thoughts.

Stress drafting & lettering techniques also bldg. const. materials methods. Generally -- We have been quite satisfied with the students who have worked with us. Perhaps an in-depth objective analysis -- discussion would reveal more.

Some design courses involving large projects that give co-op an opportunity to design some structural concrete, structural steel, and other basics. Practical construction procedures, and techniques for large construction projects that involve millions of dollars.

Suggestions for the Mechanical Technology Programs

Not familiar with your school programs, but both co-op students that were with us seemed to learn readily by working along with our experienced mechanics. The last student (who I intended to hire full time) left me to join the Army Tank Arsenal in Warren, Mich.

Your program fits our needs very well.

Give more concentration to daily problem solving in industrial electronics during class work.

Get instructors with more work related experience. Just as the co-op program emphasizes experience, so should the faculty consider that a requirement for its members.

We continue to have a need for students with an "auto mechanic" background.

CHAPTER IV

DISCUSSION

Introduction

The previous chapter addressed itself to the tabulation and transfer of data from the surveys to an organized, descriptive format. This final chapter fulfills the aspect of descriptive research which "implies that some type of analysis and evaluation be involved in the process."[1]

This chapter briefly expresses some inferences and response patterns that were not already presented and summarizes the study.

Almost 85% of the student groups were reached by the survey. Nearly all those students live in the Detroit Metropolitan area. This indicates that the college has prepared the students to fill jobs in the industries of Macomb and neighboring counties. Many students provided change of address information. Lists were prepared and sent to the South Campus Registrar's Office and to the Industrial Cooperative Education Office for record updating. Appendix A contains the acknowledgment sent to respondents.

Also, a list of responding companies was prepared and sent to the Office of the Vice-President for Instruction at MCCC. A letter of acknowledgment, attached in Appendix B, was sent to each company. The list was also sent to the Industrial Cooperative Education Office for record updating.

Some Benefits of Co-Op at MCCC

It appears that a student who chooses the co-op option has a substantially greater chance to obtain a full-time job in a program related area than a non co-op participant.

---

[1]Joseph E. Hill and August Kerber. Models, Methods and Analytical Procedures in Education Research (Detroit, Michigan: Wayne State University Press, 1967), p. 110.

Tables 8 and 10 provide the data to support the statement. The excerpts listed below present the supporting evidence.

Previous Work Experience
(See Table 8)

	Co-op		Non Co-op	
	Number	%	Number	%
Job Related to Technical Program	48	19.05	82	29.93

Current Status
(See Table 10)

	Co-op		Non Co-op	
	Number	%	Number	%
Full-time Program Related Job	163	64.68	120	43.79

Almost 21% more former co-ops than non co-ops are employed full-time in a program related job. The result is even more striking when it is coupled with the category of previous program related job experience. Only 19% of the co-ops indicated such experience; 30% of the non co-ops did. The co-op option had a positive impact on the students' jobs as they left the college.

It appears that co-op students were more adequately prepared to accomplish their goals in an MCCC Industrial Technology Program than are the non co-op students. The following excerpt from Table 13 reveals information when combined with the previous excerpts from Table 10.

Reasons for Enrolling
(See Table 13)

	Co-op		Non Co-op	
	Number	%	Number	%
Job Upgrading	31	12.30	91	33.21
To Get a Different Job	118	46.83	119	43.23
Total	149	59.13	210	76.44

The fact, that 65% of the co-op respondents have a full-time program related job and 59% indicated one or both the above reasons for enrollment, leads to the inference that co-op participation was a factor in goal attainment for all but 6% of the group.

The non co-op respondents, on the other hand, indicated one or both of the excerpted reasons for enrollment with a frequency of 76.44%. Their rate of full-time employment in a program related job was calculated as 43.79%.

Salary Differential

It is apparent that the salary difference between co-op and non co-op groups was statistically significant (See Table 11). Previous work experience and the reasons for enrolling as shown in Tables 8 and 13 may have been an influence in the variance of the salary rates.

Nineteen per cent of the co-op participants indicated previous program related work experience and 12% indicated job upgrading as a motivation. These account for 31% of the sample. The same two factors for the non co-op group account for 61% of the sample. From this, the influence of longer service in the company and more pre-college work experience precludes stating inferences using salary as a basis for comparison.

Subgroup Patterns

Some interesting patterns developed after examination of Tables 17 through 23 which display information about each of the seven items from Table 16. The subgroups provided are:

1. graduates
2. non graduates
3. program related job holders
4. non program related job holders
5. design technology programs
6. mechanical technology programs
7. program not known

The items from Table 16 are:

1. technical knowledge
2. hands-on experience
3. self-understanding
4. ability to get along with others
5. ability to communicate with others
6. to get a better job
7. overall my program was _____

When comparing the graduate co-op and graduate non co-op subgroups, the co-ops rate all seven items more favorably than the non co-ops. The following were found to be significant:

1. hands-on experience
2. to get a better job
3. overall my program was _____

For the non graduate subgroup, the co-op group rates three items more favorably than the non co-op group. The third one was statistically significant. Those items are:

1. hands-on experience
2. to get a better job
3. overall my program was _____

Co-ops who have program related jobs rate four items from Table 16 more favorably than non co-ops. Those items are:

1. technical knowledge
2. hands-on experience
3. to get a better job
4. overall my program was _____

On all seven items, the non co-ops who now have program related jobs indicated more favorable responses than the co-op group who have non program related jobs.

In each of the seven cases comparing the Design Technology co-op student subgroup and the Design Technology non co-op subgroup, the co-op group ratings resulted in more favorable mean scores. The following three ratings were found to be statistically significant:

1. hands-on experience
2. self-understanding
3. to get a better job
4. overall my program was _____

A comparison could not be made for those students who did not list a program because there were no co-op students in the category.

Observations Concerning Written Comments

Several written comments and suggestions submitted by students and employers expressed parallel views. The call for more "hands-on experience" was reiterated by all responding groups. Inclusion of "practical experience" was mentioned by some employers. Students requested addition of "actual problem solving" along with specificity in coursework. Co-op students suggested the need for including additional technical courses as well as liberal arts courses. Employers suggested that personnel from industry could provide lectures on some "practical aspects of design." In this regard, students mentioned the desirability of "guest speakers and field trips" being incorporated into the weekly co-op seminar, which has been held in conjunction with the employment phase of the program.

The non co-ops appeared to be more adamant about the need for "hands-on experience." One reason few co-ops expressed the concern may be that the co-op job placement satisfied their needs in this area. Inferior laboratory facilities were a major concern for both student groups. Non co-op students seemed more eager to comment on instructions rather than educational items.

CHAPTER V

SUMMARY

This report detailed the procedures, methods and results of an in-depth study of the Industrial Cooperative Education option at MCCC.

The student and company sample groups were compiled from college records. The instruments were developed to provide answers to questions of concern to the college. The study incorporated several techniques to maximize the response rate. As it became available, the information was prepared for computer analyses.

Findings were displayed in tables which indicated the number of responses with corresponding percentages and the .95 and .99 levels of signficance where applicable. The data was presented separately for each of the two student groups and then compared. Student respondents were divided into six subgroups representing various student characteristics.

In general, the results of the study show that students who had the co-op experience were more likely than non co-op students to:

1. have full-time program related jobs
2. experience a lower unemployment rate
3. complete their college programs
4. satisfy their reasons for enrolling at MCCC
5. perceive the preparation received at MCCC as favorable
6. be considered more efficient by employers
7. learn more quickly on the job
8. understand the company organization better

The above findings along with the detailed information contained in the tables represent substantial support for the Industrial Cooperative Education

option at MCCC. The comments and suggestions that are included present ideas to further improve an already effective program.

APPENDICES

Appendix A

Student Survey and Related Letters

NAME _____ ADDRESS _____

PROGRAM AT MCCC _____ _____

I graduated from MCCC in [ ] Spring
[ ] Summer of _____ (year) I did not graduate [ ]
[ ] Fall

The numbering system is for office use, please disregard.

PART I. We want to know what you are doing.

A. Check all the items that apply to you.

8a [ ] Employed full-time

8b [ ] Employed part-time

9a [ ] Employed in a job related to my MCCC Technical program

9b [ ] Employed in a job not related to my MCCC Technical program

10a [ ] Unemployed and seeking work

10b [ ] Unemployed and not seeking work

If you work full-time please continue. If not, go to question D.

B. Full-time employed at _____

Job Title _____

11 Hourly Pay Rate _____ 12 Or, Monthly Salary _____
(Before taxes) (Before taxes)

C. How did you get your first full-time job after leaving MCCC?

13 [ ] Continued working for my co-op company

14 [ ] College placement office helped me get my job

15 [ ] Employment agency helped me get my job

16 [ ] Parents, friends, relatives helped me get my job

17 [ ] An advertisement led me to my job

18 [ ] Other, please specify _____

D. What kind of work experience did you have before you enrolled in a MCCC Technical program? Check the items that apply to you.

19a [ ] Worked in a full-time job

19b [ ] Worked in a part-time job

20a [ ] Worked in a job related to my Technical program

20b [ ] Worked in a job not related to my Technical program

21 [ ] No work experience before college

E. What was your reason for taking one of the Technical programs at MCCC?

22 [ ] To be upgraded in my job

23 [ ] To help me get a different job

24 [ ] To help me get any job

25 [ ] To prepare for transfer to a four year technical program

26 [ ] Employer suggested that I sign up

27 [ ] Other, please specify _____

F. Check all the items that apply to your education since you left MCCC.

28 [ ] Took courses at another two year college

29 [ ] Took courses at a four year college

30 [ ] Took one or more in-service activities where I work

31 [ ] Completed one or more technical programs

32a [ ] Presently working toward a bachelor's degree

32b [ ] Completed a bachelor's degree

33 [ ] None

34 [ ] Comments, if any _____

G. If you enrolled in a four year college since leaving MCCC please answer the following.

College _____

Major _____ Hours completed since MCCC _____

PART II. We want to know how you liked your program at MCCC.

H. How well did Macomb College prepare you in the following areas? Please check one answer for each item.

		Excellent	Good	Adequate	Fair	Poor
35	Technical knowledge	[ ]	[ ]	[ ]	[ ]	[ ]
36	Hands-on experience	[ ]	[ ]	[ ]	[ ]	[ ]
37	Self-Understanding	[ ]	[ ]	[ ]	[ ]	[ ]
38	Ability to get along with others	[ ]	[ ]	[ ]	[ ]	[ ]
39	Ability to communicate with others	[ ]	[ ]	[ ]	[ ]	[ ]
40	To get a better job	[ ]	[ ]	[ ]	[ ]	[ ]
41	Overall my program was	[ ]	[ ]	[ ]	[ ]	[ ]

I. I would make these changes in the program I took at MCCC.

_____

_____

_____

_____

_____

If you were involved in the co-op option, please answer Part III on the following page.

If you were not involved in co-op, thank you for completing these questions. Your participation is appreciated.

PART III. We want to know about your co-op experience.

J. Overall, how do you rate your co-op job placement?

42a [ ] Excellent — Comments, if any _____

b [ ] Good _____

c [ ] Adequate _____

d [ ] Fair _____

e [ ] Poor

K. How well did your co-op job tie in with your courses?

43a [ ] Excellent — Comments, if any _____

b [ ] Good _____

c [ ] Adequate _____

d [ ] Fair _____

e [ ] Poor

L. I would make these changes in the cooperative program.

_____

_____

_____

_____

Thank you for completing these questions. Your participation is appreciated.

MACOMB COUNTY
COMMUNITY COLLEGE

CENTER CAMPUS
16500 HALL ROAD
MT CLEMENS, MICHIGAN 48043
(313) 465-2121

Dear Former Student:

Macomb College is initiating a study of recent Design and Mechanical Technology students as an ongoing effort to improve our programs. We regard your participation as necessary to the success of the study. Because you were a student in one of the technical programs, your insight will prove to be a valuable contribution.

We urge you to complete the enclosed questionnaire that will require approximately ten minutes to complete. Your responses will not be personally identifiable. Any information received will be used for this project only.

As evidence of our appreciation, all those returning a completed questionnaire will be eligible for a drawing. The award will be a Texas Instruments Calculator Model SR51-2. This model is particularly useful for persons holding technical jobs. The winner will be notified by mail.

Please fill in this questionnaire as soon as possible. A self-addressed, stamped envelope has been included for your convenience. If you have an inquiry about the questionnaire, call Nancy Freeman in the Research Office at 286-8000 extension 332.

Thank you for your participation and continued interest in Macomb College.

Sincerely,

Hubert D. Reid, Dean
Occupational/Technical Education

Paul Gould

Walt Lowalzy

Coordinators
Industrial Cooperative Education

NSF/ktr
enclosures

Macomb County Community College
P.O.Box 309
Warren, Michigan 48090

Nonprofit Organization
POSTAGE
PAID
PERMIT No 161
Warren, Michigan

Dear Former Student,

Recently you received an inquiry about your program at Macomb College and your current career. Because your response is crucial to the study, it is necessary that we hear from you. Also, to be eligible for the drawing, you must return the completed form.

If you have already sent it in, thanks. If not, could you spare a few minutes today? We appreciate your participation.

Sincerely,
Nancy S. Freeman
Nancy S. Freeman
Research Dept.

MACOMB COUNTY
COMMUNITY COLLEGE

CENTER CAMPUS
16500 HALL ROAD
MT CLEMENS, MICHIGAN 48043

286-8000 Ext. 332

May 13, 1977

Dear Friend:

About four weeks ago you received a form requesting information about your Macomb College experience and your current career. As yet, we have not received your response, and it is important that we do. Therefore, we are enclosing another copy of the form and a return envelope for your convenience.

Don't forget -- in order to be eligible for the random drawing of the Texas Instrument Calculator Model SR51-2 we must have your completed form. All responses will be treated as confidential and used for this study only.

Sincerely,

Nancy S. Freeman

Nancy S. Freeman
Research Department

/ds

Enclosure

MACOMB COUNTY
COMMUNITY COLLEGE

OUR NEW MAILING ADDRESS IS:
MACOMB COUNTY COMMUNITY COLLEGE
CENTER CAMPUS
P.O. BOX 309
WARREN, MICHIGAN 48090

September 16, 1977

Dear

The Research Department of Macomb County Community College wishes to thank you for participating in our study of the Industrial Technology Co-Op Program.

As you may recall, a random drawing was to be held with all respondents eligible for the prize -- a Texas Instrument SR-51-II Calculator. I am pleased to inform you that you were chosen to receive this useful calculator.

Please call the Research Department at 286-8000, Ext. 332, to arrange for receipt of your gift.

Sincerely,

Nancy S. Freeman

Nancy S. Freeman
Research Department

/ds

MACOMB COUNTY
COMMUNITY COLLEGE

SOUTH CAMPUS
14500 TWELVE MILE ROAD
WARREN, MICHIGAN 48093
(313) XXX-XXXX
779-7432

October 20, 1977

Dear Friend,

The MCCC Research Department has just completed the survey project concerning the Industrial Technology Programs and the Industrial Cooperative Education option. The answers and comments you supplied helped produce the successful outcome of the study.

The information provided by the group of participants is a valuable asset to the College's continuing service to students and other community members.

As you may recall, we agreed to conduct a random drawing for a calculator. The name randomly selected was that of Mr. Victor Bodek of Sterling Heights.

We appreciate your participation in this project. If we can be of further assistance as you pursue your education, feel free to call upon us.

Sincerely,

Hubert D. Reid

Hubert D. Reid, Dean
Occupational/Technical Education

/nk

Appendix B

Company Survey and Related Letters

Company Survey for Technical Programs at MCCC

A. Please estimate how many of your employees were trained in the Industrial Technology programs at Macomb College between 1970-75. _____

B. Of these, about _____ were involved in co-op.

C. Please indicate the technical preparation of former Macomb College Industrial Technology students who were not involved in co-op but were hired by your company. Check one response for each program with which you are familiar.

	Program	Excellent	Adequate	Fair	Poor
5.	Auto Body Design	[ ]	[ ]	[ ]	[ ]
6.	Surveying Technology	[ ]	[ ]	[ ]	[ ]
7.	Architectural Drafting	[ ]	[ ]	[ ]	[ ]
8.	Printing Technology	[ ]	[ ]	[ ]	[ ]
9.	Special Machine Design	[ ]	[ ]	[ ]	[ ]
10.	Graphic & Commercial Art	[ ]	[ ]	[ ]	[ ]
11.	Tool Fixture & Die Design	[ ]	[ ]	[ ]	[ ]
12.	Climate Control Technology	[ ]	[ ]	[ ]	[ ]
13.	Electro Technology	[ ]	[ ]	[ ]	[ ]
14.	TV & Sound Repair	[ ]	[ ]	[ ]	[ ]
15.	Fluid Power Technology	[ ]	[ ]	[ ]	[ ]
16.	Industrial Supervision	[ ]	[ ]	[ ]	[ ]
17.	Metallurgical Technology	[ ]	[ ]	[ ]	[ ]
18.	Metals Machining	[ ]	[ ]	[ ]	[ ]
19.	Metrology & Calibration	[ ]	[ ]	[ ]	[ ]
20.	Numerical Control	[ ]	[ ]	[ ]	[ ]
21.	Welding Technology	[ ]	[ ]	[ ]	[ ]
22.	Civil Technology	[ ]	[ ]	[ ]	[ ]
23.	Automotive Tech. Aviation Mech. Technology	[ ]	[ ]	[ ]	[ ]
24.	Labor Studies	[ ]	[ ]	[ ]	[ ]

D. Please indicate the technical preparation of former Macomb County Community College Industrial Technology students involved in co-op who were hired by your company. Check one response for each program with which you are familiar.

	Program	Excellent	Adequate	Fair	Poor
25.	Auto Body Design	[ ]	[ ]	[ ]	[ ]
26.	Surveying Technology	[ ]	[ ]	[ ]	[ ]
27.	Architectural Design	[ ]	[ ]	[ ]	[ ]
28.	Printing Technology	[ ]	[ ]	[ ]	[ ]
29.	Special Machine Design	[ ]	[ ]	[ ]	[ ]
30.	Graphic & Commercial Art	[ ]	[ ]	[ ]	[ ]
31.	Tool Fixture & Die Design	[ ]	[ ]	[ ]	[ ]
32.	Climate Control Technology	[ ]	[ ]	[ ]	[ ]
33.	Electro Technology	[ ]	[ ]	[ ]	[ ]
34.	TV & Sound Repair	[ ]	[ ]	[ ]	[ ]
35.	Fluid Power Technology	[ ]	[ ]	[ ]	[ ]
36.	Industrial Supervision	[ ]	[ ]	[ ]	[ ]
37.	Metallurgical Technology	[ ]	[ ]	[ ]	[ ]
38.	Metals Machining	[ ]	[ ]	[ ]	[ ]
39.	Metrology & Calibration	[ ]	[ ]	[ ]	[ ]
40.	Numerical Control	[ ]	[ ]	[ ]	[ ]
41.	Welding Technology	[ ]	[ ]	[ ]	[ ]
42.	Civil Technology	[ ]	[ ]	[ ]	[ ]

E. Please respond to the following statements, as an evaluation of long range effects of involovement in co-op education.

		Yes	No	No Difference
43.	Employees who were co-ops tend to be promoted faster.	[ ]	[ ]	[ ]

	Yes	No	No Difference
44. Employees who were co-ops appear more satisfied.	[ ]	[ ]	[ ]
45. Employees who were co-ops are more efficient.	[ ]	[ ]	[ ]
46. Employees who were co-ops learn on the job more quickly.	[ ]	[ ]	[ ]
47. Employees who were co-ops have a better understanding of the company.	[ ]	[ ]	[ ]

F. Please choose one or two programs with which you are most familiar and comment on the strengths, weaknesses and suggestions for change.

Program Name _____

1. Strengths _____

_____

_____

2. Weaknesses _____

_____

_____

3. Suggestions _____

_____

_____

Program Name _____

1. Strengths _____

_____

_____

2. Weaknesses _____

_____

_____

3. Suggestions _____

_____

_____

Thank you for your cooperation.

Name _____ Position _____

Company _____

Address _____

_____

MACOMB COUNTY
COMMUNITY COLLEGE

SOUTH CAMPUS
14500 TWELVE MILE ROAD
WARREN, MICHIGAN 48093
(313) 772-8000

Dear

Macomb College is initiating a study of former technical students in order to evaluate and improve the various programs. The study is important to students, the college and ultimately to your company as a community employer.

We urge you to participate by completing the enclosed questionnaire. A pre-addressed stamped return envelope is provided for your convenience. The information will be confidential as all company identification will be removed before tabulation. Your cooperation in this project is greatly appreciated.

Thank you.

Sincerely,

Hubert D. Reid, Dean
Occupational/Technical Education

Paul Gould, Coordinator
Industrial Cooperative Education

NF/nl

enclosures

MACOMB COUNTY
COMMUNITY COLLEGE

May 17, 1977

Dear

Your participation in a recent study the College conducted of Cooperative Education has been most helpful. By completing the questionnaire, you have assisted in providing us with information that will ultimately help to better prepare students.

Thank you for your cooperation.

Sincerely,

James J. Blanzy
Assistant Vice President
For Instruction

Appendix C

Four Year Colleges Attended by Student Respondents

TABLE 35

Students Who Took Courses
At Four-Year Colleges

	Number	Percent of Respondents
Co-op Students N = 252	54	21.51%
Non Co-op Students N = 274	78	28.46%

Four-Year Colleges Attended
By Former Co-op Students

N = 54 (21.51%)

College	No. of Students	Range of No. Credit Hours Earned: Least No. Earned	Range of No. Credit Hours Earned: Greatest No. Earned	Programs
1. Center for Creative Studies	2	70	--	Advertising Design Fine Arts[1]
2. Eastern Michigan University	1	--	--	Mechanical Engineering
3. Ferris State	2	--	15	Surveying Industrial Management
4. Lawrence Institute Technology	13	5	70	Architecture[2] Computer Science Construction Engineering Electrical Engineering Engineering Industrial Management Mechanical Engineering
5. Oakland University	2	2	--	General Engineering
6. University of Arizona	1	62	--	Architecture
7. University of Detroit	1	--	--	Accounting[3]
8. University of Michigan	2	--	--	Marketing Electrical Engineering[4]
9. Walsh College	2	6	89	Business Administration
10. Wayne State University	25	10	170	Art Business Administration Civil Engineering Electrical Engineering Engineering General Business Industrial Arts Education Industrial Design Industrial Management Mechanical Engineering Metallurgical Engineering
Total	51			

[1] Earned a B.F.A.
[2] Earned a B. Arch.
[3] Earned a B.B.S.
[4] Earned a B.S.

Four-Year Colleges Attended By
Former Non Co-op Students

N = 78 (28.46%)

College	No. of Students	Range of No. of Credit Hours Earned: Least No. Earned	Range of No. of Credit Hours Earned: Greatest No. Earned	Programs
1. Center for Creative Studies	1	6	--	Fine Arts
2. Central Michigan University	2	16	--	Industrial Management Management
3. Eastern Michigan University	2	58	70	Industrial Education
4. Ferris State College	1	--	--	Engineering
5. Kent State Univ. (Ohio)	1	130	--	Interior Design
6. Lawrence Institute of Technology	9	5	145	Architecture Computer Science Construction Engineering Electrical Engineering Mechanical Engineering[1]
7. Michigan State University	5	54	100	Building Construction Clothing & Textiles Economics Mechanical Engineering Supervision
8. Oakland University	7	8	62	Engineering[2] Graphic Art Management[1] Sociology
9. Sacred Heart Seminary	1	2	--	Cantor
10. University of Detroit	3	3	32	Architecture Business Engineering

[1]Earned a B.S.

[2]Earned a B.A.

Four-Year Colleges Attended By
Former Non Co-op Students (cont'd)

College	No. of Students	Range of No. of Credit Hours Earned: Least No. Earned	Range of No. of Credit Hours Earned: Greatest No. Earned	N = 78 (28.46%) Program
11. University of Wisconsin	1	48	--	Music
12. Walsh College	2	15	30	Business Administration Management
13. Wayne State University	35	7	200	Civil Engineering Electrical Engineering General Studies (10) Industrial Education Industrial Engineering[1] Journalism Manufacturing Engineering Mechanical Engineering
14. Western Michigan University	5	28	80	Business Administration Electrical Engineering Manufacturing Engineering Metallurgical Engineering[2] Vocational Education
International Institutions				
Fachhochschule Köln	1	--	--	Automotive Technology
University of Waterloo Ontario, Canada	2	--	--	Architecture
Total	78			

[1]Earned a B.S.

[2]Earned a B.A.

Appendix D

Suggestions and Comments of Respondents

INTRODUCTION

The lists contained in this section were chosen from larger groups of comments received for each item. For purposes of this report, the following criteria were followed in selection of representative comments:

1. Comments using specific names of persons and programs were not chosen.

2. Where several comments indicate a similar theme, one was chosen as representative.

3. A combination of favorable and unfavorable comments were selected for each item.

Students who view a college program or person either with strong positive feelings or with strong negative reactions are probably more likely to respond to an open-ended item asking for an opinion.

However, the validity of the comments should not be held suspect because of the method used to include them or the motivation of the persons giving them. The lists of opinions and suggestions have been typed exactly as written to preserve the essence of the student responses. No corrections of spelling, punctuation, or grammar were made. It is imperative that the reader remain mindful of the above statements while reading and evaluating the following lists.

Section 1

Suggestions For Program Changes From The Cooperative Student Respondents

The following list is a representative sample of the comments made by respondents:

1. I would have all students entering the technical fields, take some sort of test prior to entry, to determine whether or not they will make it on the job. A lot of students seem to be wasting their time going towards a degree in a field they have no talent in.

2. Something has to be done regarding the problem of getting advance required tech. courses. Mine is not the only case where upon entering a program, it can't be finished because either the course isn't offered or it's cancelled because not enough sign up. I would suggest a special mailing to all those who have not finished a certificate or associate degree, to ascertain exactly why a student has not finished-if there is still interest etc. Suggested format: our recent questionnaire.

3. It would be very helpful if all of the courses needed to get the certificate were available to me. Especially since I got the assurance from a counselor before I enrolled in the program. Unfortunately the last course that I needed to receive the certificate was not available.

4. Introduce a 4 year program.

5. Improve lab work with up to date equipment.

6. Closer working between students and teachers with a goal in mind in reference to what the student needs.

7. The instructor made the course worthwhile--outstanding instructors are the basis for a strong program.

8. Some of the instructors I had were not knowledgeable enough in a practical sense. They were too much theory for a two year degree. I think instructors should be chosen from the industry.

9. I think more practical experience in the class room would be beneficial and also more working with tools and hand on experience.

10. Class work should be closer to on the job problems, so the students could see what he is going to hav to do on the job.

11. I would like to see more actual problem solving incorporated into the program, I do not mean mathematical models but actual hardware problems to make the student utilize his ability to transfer his knowledge from brain to hands. This is very important asset to anyone going into a specialized field.

12. Addition of: Calculus, strength of materials, statics, history, art, compositions (comprehensive writing).

13. I think the program could use more attention in the areas of sciences, mathematics, and communications (oral and written) so that it is not such an ordeal to go on for a bachelor's degree.

14. A more specific program. Touched down too little on too many subjects. Dabbled in everything and mastered nothing.

Section 2

Suggestions For Change From Non Co-op Student Respondents

1. Field trips.

2. More advanced information - E.G. Integrated circuits, transistors; instructors should show more concern over knowledge being absorbed by students in early semesters of program.

3. Update some drafting courses -- 1. Geometric tolerancing. 2. New computer drafting courses.

4. Make the classroom, as close as possible to a real work situation. More time spent on design, and preliminary drawings. Have a class that emphasizes accuracy and lettering of a drawing.

5. After leaving Oakland University to find a school offering Commercial Art, I found after checking into other area schools, Macomb had the best program suited to my needs in the field of work I wished to enter. I found its two year program had many advantages over a four year institute.

6. Labs for technical classes were too "programmed". They provided very little learning experience.

7. I would suggest a deeper involvement with the theoretical aspect of my program.

8. Try to make assignments more of on the job type of work.

9. More hands-on experience with typical equipment being installed in the field, both commercial and industrial.

10. The program I took at MCCC was very good in most instances. I would change nothing. Most instructors did an outstanting job. However, the labs were very poor. We never had enough equipment and lot of the equipment we did have was not in working order.

11. This program is in sad shape as far as equipment (lack of it) and instructors (lack of experience and knowledge).

12. Also you have some instructors who know their field excellently, but have a problem communicating it to the students. These instructors are very few, in whole I believe your instructors are the best I have seen anywhere.

13. I enjoyed most of the classes, the education I received was excellent, the teachers were excellent and involved in their jobs.

14. Some of the night-(part-time) instructors were unprepared for teaching a course. More teacher guidance when students are working on an experment.

15. Instructors were not equally qualified in their field of instuction. From extremely excellent to poor. I suggest more response be made from student submitted semester evaluation of instructors. Evaluation reports seem to be disregarded.

16. More practical experience, smaller class size, more of the manufacturing management concept.

17. The reason I left MCCC was because of the difficulty I experienced in obtaining classes geared to a night time program. A two year school should be accessible to day full-time as well as part-time night.

18. Provide a four year technology program and more technical practical experience.

19. Better communication with counselors.

Section 3

Comments Concerning Cooperative Job Placement

1. The co-op experience was the best thing that could have happened to my career.

2. Already worked for company before taking co-op class.

3. I learned about the so called "real world" -- very political.

4. Adequate for learning, but poor for economic support/hours per day ratio. Also poor for job advancement.

5. It was a good to excellent opportunity to learn skill and also to be productive on the job. Would like this experience gain.

6. I would as easily gotten my job by walking in off the street with no experience.

7. Would rather have been placed in company more involved in the area I was gaining instruction.

8. Allowed me to receive on the job training and learn those skills lacking and to find out those areas that I needed more work.

9. Although it didn't directly relate to my program at Macomb -- the experience I received on the job was of great value to me.

10. I felt the job was a challenge with a good future. I would recommend the Co-op program to anyone interested in making a future for him/her self.

11. When I was delegated my position I firmly believed the lack of negotiation allowed the employer to take advantage of previous training.

12. Company should pay co-op students better.

Section 4

Comments Concerning The Relevance Of The
Cooperative Job Placement And Courses At M.C.C.C.

1. Hands-on experience was limited to minor detailing changes etc. - more knowledge was gained from conversation with high-ups!
2. They taught me the basics to get started in my field, and also showed me how Chrysler Corp. works.
3. Most of my courses have helped me with my jobs at one time or another.
4. I, personally feel I learned more in (2) mos. on co-op than I did in one full semester.
5. I didn't get a chance to learn anything. I was reduced to a filing clerk.
6. Not enough technical knowledge. No trouble shooting technique taught.
7. You were able to apply what you learned.
8. My co-op job provided a direct feedback to my course work and allowed me to adjust my objectives more realistically.
9. My co-op experience was not directly related to my field or study at all. However, some of my courses were useful, and overall the co-op period entirely worthwhile.
10. Good preparation by the instructors at MCCC.
11. The man I worked with was a better teacher than any I had at M.C.C.C. because he had more practical experience.

Section 5

Suggestions For Changes In The Cooperative Program Given by Cooperative Student Respondents

Job Related

1. I would try to make certain that all co-op students could get some on-the-job experience at whichever company they were employed.

2. On the whole the set-up of the program was not bad and would be hard to improve upon but if and when it is possible I feel that in the best interest of the student, that the co-op job that he or she applies for should be as closely matched to their training and field of interest as possible.

3. If possible it might be more helpful to explore more fully the abilities of each student and the level of training necessary for each placement. Example is that I knew of a few persons placed in positions that were not trained fully for and others over-trained that might have had a better experience elsewhere.

4. Industry has not properly allowed or provided a "slot" for an individual with an associates in Technology. The degree helps to obtain the initial position but the pay scales, potentials, etc. are not necessarily broadened. ---One is forced to compete with engineers who generally have a more thorough, analytical background. If the technical degree person wanted to function strictly as a technician and expects to be rewarded he may be disillusioned. ---I believe students should ask themselves whether they are going to be happy as a technician or if they intend to compete and or expect to become an engineer. Students should understand the limitations of a technition type position. --- People envolved with these programs at MCCC should be determined to not only "sell" the programs to students and industry but "instruct" the personal and department management as to the details of the program and to what should or could be expected from graduates. Most people do not know what the program is or means. Personal associates this degree with Certificate or Trade School programs.

Industrial Cooperative Education Seminar Class (ICI 250)

1. That classes held on Thursday night should be more related to the student. Have architects, engineers, and mechanics, etc. come in, answer questions and communicate ideas to the student.

2. Get more seminars (and student workshops) on technology and social change (could be a way to work on some cooperation between the liberal arts and occ. ed.).

3. I feel separate class sessions should be held for the different fields rather than putting them altogether.

4. The co-op program as far as job placement is concerned is very excellent, but attending some of the required weekly classes proved absolutely to be useless. I feel they should be cut out or at least be shortened.

General Statements

1. Expand it! I feel this is the best way to obtain a technical degree.
   a. Allows individual to experience lab/text book knowledgeable on the job.
   b. Gain workin knowledge of industry.
   c. Helps to finance education.
   d. Allows for alteration of education if goal changes.

2. Have the college coordinate with area industries as to their methods and teach similar courses. Add management and computer course to all areas of study to further everyones understanding of the present and future operations of the business world.

3. I would like to see it become mandatory for students with no work experience.

4. I think the program is extremely well organized.

5. Co-op is a great learning experience. Anyone thinking of a tech field should look into co-op -- A way in which you will fully understand the field you are attempting to make a career of.

6. More self-addressed questionnaires, such as this on "What I am doing".

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